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## 7.0 ACCESS ROADS

### 7.1 INTRODUCTION

This section contains design criteria for route selection reconnaissance, and geometry of access roads for the gas pipeline project. Criteria are presented for both new access roads and the rehabilitation of existing roads and addresses both permanent and temporary roads. Design procedures are also discussed regarding route selection, geometric design, and the road identification system.

There are no construction specifications or calculations included in this section. Additionally, design criteria for embankment thickness are presented in Section 9, and criteria for drainage and erosion control, restoration, clearing, bridges and appurtenances are found in other sections of the Technical Information Supplement.

During the design stage, a determination of whether a road will be needed for permanent access will be made to the extent possible. If needed, permanent design criteria will be utilized. If the permanent need cannot be determined, temporary design criteria will be used. The road will be upgraded to permanent design if such a need is established prior to or during operation.

### 7.2 CODES AND CRITERIA

#### 7.2.1 Codes

- Alaska Department of Transportation and Public Facilities, Standard Drawings and Specifications for Highway Construction, 2001
- Alaska Traffic Manual Supplement, August 7, 2000
- Alaska Administrative Code, Title 5 – Fish and Game
- Alaska Administrative Code, Title 17 – Transportation and Public Facilities; Chapter 10, Section 20 - Driveway and Approach Roads
- Alaska Statutes, Title 16 – Fish and Game
- Alaska Statutes, Title 38 – Public Lands
- Code of Federal Regulations, Title 18 – Conservation of Power and Water Resources
- Code of Federal Regulations, Title 33 – Navigation and Navigable Waters, Part 323 – Permit for Discharges of Dredged or Fill Material into Waters of the United States
- Code of Federal Regulations, Title 23 – Highways, Chapter 1 – Federal Highway

Administration, Department of Transportation

- Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time
- Federal Energy Regulatory Commission conditional certificate of public convenience and necessity, issued on December 16, 1977, as such is finalized

## 7.2.2 Criteria

- Location - Access road locations will be based on the following:
  - Project requirements for access related to construction, operation and maintenance of the gas pipeline system.
  - Information gathered during field reconnaissance and field surveys.
  - Minimal impacts on TAPS facilities, adjacent or nearby facilities or interference with routine operations of TAPS and/or other private or public facilities within the immediate area of the road.
  - Minimize placement of embankment or reuse of TAPS workpad in areas of known auffs.
  - Avoid, where practical, placing embankments where surface water flows would be diverted and/or concentrated such that adjacent or nearby facilities would be adversely impacted. The hydraulic impact of access road embankments on adjacent third party structures will be assessed using the design flood of that third party structure.
  - Reduce, minimize and/or eliminate visual impacts resulting from access road construction.
  - Minimize access points with state highways and other roadways.
  - Utilize, where practical, highway, TAPS access roads, and other existing roads for access to the gas pipeline project.
  - Minimize the use of TAPS workpad as construction access
  - Provide site-specific design in areas with soils of high thermal or hydraulic erosion potential if the area cannot be avoided.
  - Minimize impacts to wetlands.
  - Minimize impacts to fish habitat, especially key areas such as spawning or overwintering.
  - Minimize impacts to areas of riparian vegetation.

- Avoid all known archaeological sites.
- Minimize impacts to sensitive wildlife areas.
- Embankment Thickness

Required embankment thickness for access roads will be a function of design vehicle loads and geotechnical and geothermal conditions as discussed in Section 9. All roads will be designed with appropriate allowances for construction maintenance (see Section 9). Embankment thickness may be increased to satisfy the geometric standards of the road. For typical embankment thickness at TAPS or the Fuel Gas Pipeline crossings see Figure 7-3 and Figure 7-4.
- Road traffic surfaces will be adequate for passage of construction vehicles (see Section 9).
- Geometric standards for access roads will be based on a 30-mph design speed and an American Association of State Highway and Transportation Officials (AASHTO) WB-50 design vehicle. Figures 7-1 through 7-5 illustrate typical sections of access roads. Exceptions to these standards will be site specific.
- Drainage and erosion control design criteria will be in accordance with Section 11.
- Restoration design will be in accordance with Section 12.
- Bridge design will be in accordance with the design criteria in Section 14.
- Clearing and disposal of materials criteria will be in accordance with Sections 9 and 10.
- Right-of-Way (ROW) Crossings

Design of access roads crossing private ROWs will be based on site specific information. Authorized access along the ROW will not be impeded. Traffic control barriers will be provided, as required, to prevent unauthorized access and provide adequate protection to existing facilities (i.e., TAPS workpad, TAPS pipeline, power lines, etc.). Specific details of traffic control measures will be discussed in the construction specifications.
- Traffic control barriers for protection of the TAPS pipeline at points where access roads will cross the pipeline, especially in the aboveground mode, will be designed to include the following considerations:
  - A continuous barrier will be provided between TAPS and its related facilities and gas pipeline construction activities.
  - The barrier will preclude damage to the TAPS workpad and will not jeopardize the integrity of TAPS (i.e., channelization of surface water flow or concentration of aufeis).

- No construction activities will be allowed within a zone of which at a minimum will be 15 feet clear horizontal distance from any portion of TAPS.
- Where access road or longitudinal workpad slopes are less than four percent, the barrier will be designed to prevent encroachment into the above-referenced safety zone. Equipment momentum should not be a problem in these areas, but vehicle extensions will be considered.
- Where access road or longitudinal workpad slopes warrant, the barrier will be designed to either stop or deflect runaway equipment.
- Barrier design will be site specific. Alyeska Pipeline Service Company (APSC) will be consulted during design of the barriers.

### 7.3 DESIGN PROCEDURES

#### 7.3.1 General

The access road program will provide for the design of access roads to satisfy project requirements for construction, operation, and maintenance of the gas pipeline system.

The access road program is divided into three phases as follows:

- Preliminary route selection will be made by construction, environmental and engineering personnel in the office utilizing the best available information.
- Field reconnaissance and surveys will be conducted to collect the detailed information required for final design of the access roads. Existing roads will be investigated to determine the extent of rehabilitation measures required to make them safe for traffic. All proposed new access roads will be reconnoitered and surveyed. For existing access roads, field surveys will be performed only if reconnaissance determines a need for the survey. Field reconnaissance will also include evaluation of impact to TAPS and other adjacent facilities.
- Final design will provide the documents necessary for the construction of new access roads, and the rehabilitation and upgrading of existing access roads.

For purposes of design, access roads are divided into two classifications, new and existing:

- New Access Roads

Design will be in accordance with the design criteria presented herein. Plan/profile drawings will be developed for each new access road based on site data gathered during the field reconnaissance and surveys.

- Existing Access Roads

Rehabilitation and upgrading will be in accordance with the design criteria presented herein.

Design of material site access roads, both new and existing, will be accomplished as follows: During preparation of mining plan permit packages, a preliminary design will be made based on the design criteria presented herein, existing mapping, aerial photography, reconnaissance reports, etc. Specifically, a plan view drawing will be developed and included as part of the mining plan to be submitted for agency approval. This drawing will show access road geometry, location of facilities, preliminary drainage design, estimated material quantities, driveway details, etc. Upon approval of the mining plan, a final design will be developed for the access road based upon the preliminary design, field reconnaissance, surveys and other pertinent data.

### 7.3.2 Preliminary Route Selection

- Routes will be selected to provide access to the gas pipeline, construction camps, airports, material sites, etc., by utilizing existing roads and/or constructing new roads. Preliminary routing of new access roads will be performed using information obtained from multiple sources. Sources of information include aerial photography, topographic mapping, the Environmental Master Guide (EMG), as such may be updated or amended from the original, route soils maps, lists of sensitive fish and wildlife areas and the best available information on terrain features, visual impact, fish and wildlife habitats, vegetation, previously disturbed areas and their relationship to existing facilities.

Preliminary route selection will precede field reconnaissance and will reflect the criteria included herein.

### 7.3.3 Access Road Identification

Access roads will be identified by a series of code numbers and/or letters that will present the alignment sheet location, the purpose of the road and the sequential number of the road on the particular alignment sheet.

### 7.3.4 Field Reconnaissance

Upon completion of the preliminary route selection, a field reconnaissance of the tentatively selected route will be performed to gather site-specific information regarding, but not limited to, the following:

- Use of existing vegetation and/or landforms for screening visibility

- Paralleling contours where possible
- Terrain
- Site drainage and adequacy of existing drainage structures
- Subsurface conditions
- Current land use
- Adjacent facilities
- Confirm preliminary access route selection
- Vegetation
- Visual impacts
- Fish and wildlife habitats
- Stream grades at fish stream crossings

### 7.3.5 Final Design

#### 7.3.5.1 Road Status

The permanent or temporary status of an access road will be a function of its intended use. Design criteria for both permanent and temporary access roads will be in accordance with Section 7.1.2. Drainage structure design will be in accordance with Sections 11. Decommissioning of temporary roads will be in accordance with Sections 12.

#### 7.3.5.2 Embankment Design

The access road embankment thickness required for structural and/or thermal integrity will be determined by methods discussed in Section 9. However, the methods may not necessarily control elevations set for access road grades, since final elevations are also a function of geometric considerations and drainage requirements, but they will be no less than structural requirements. Embankment thickness at TAPS crossings will consider parameters listed in Section 20 and as shown on Figure 7-1 and Figure 7-4. At TAPS crossings, APSC will be consulted regarding stress levels imposed on TAPS. If the stress imposed on TAPS is above acceptable limits, alternate designs will be considered (e.g., bridges or casings).

#### 7.3.5.3 Geometric Design

Final design analysis for each access road will consider site specific conditions. Figures 7-1 through 7-4 present typical access road sections.

### 7.3.6 Drainage, Erosion Control and Restoration Design

Design for drainage structures, erosion control and fish passage will be in accordance with Section 11. Restoration measures will be in accordance with Section 12.

#### 7.3.6.1 Bridge Design

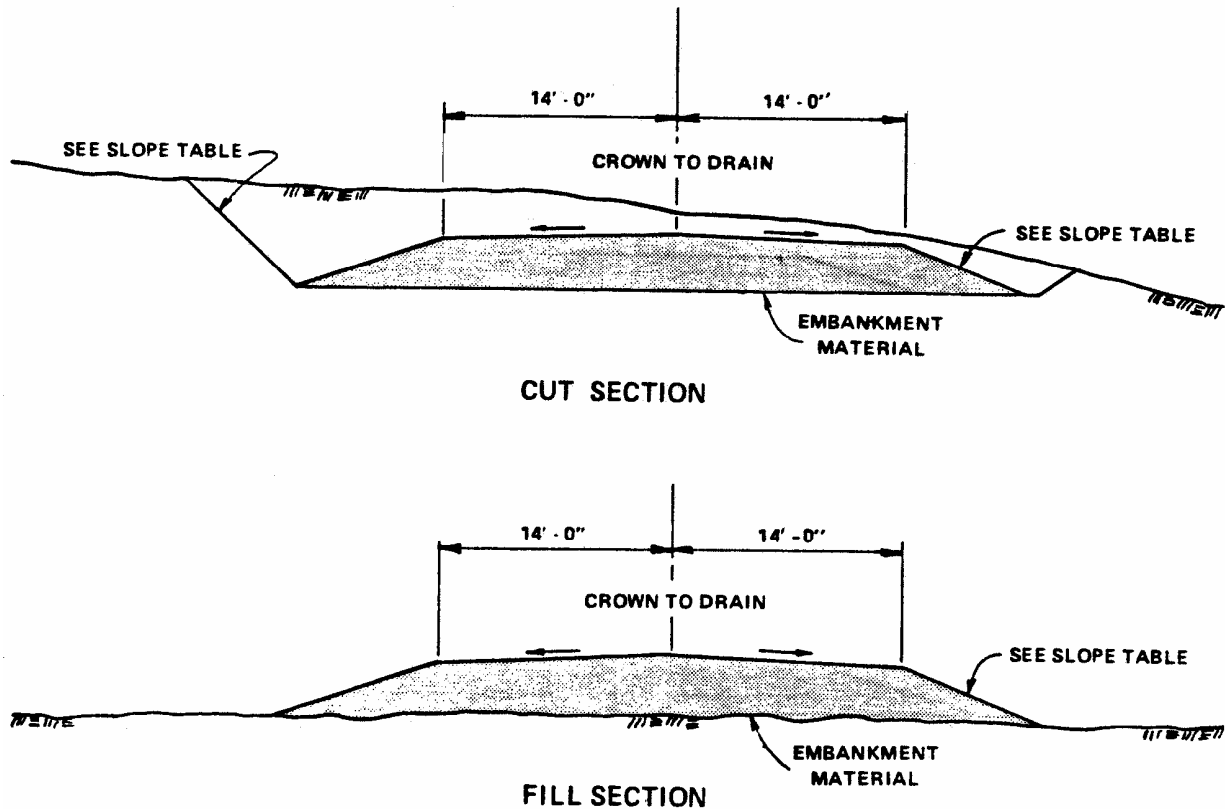
Bridge design will be in accordance with Section 14.

#### 7.3.6.2 Clearing

Clearing procedures will be in accordance with Section 10.

### 7.4 LIST OF FIGURES

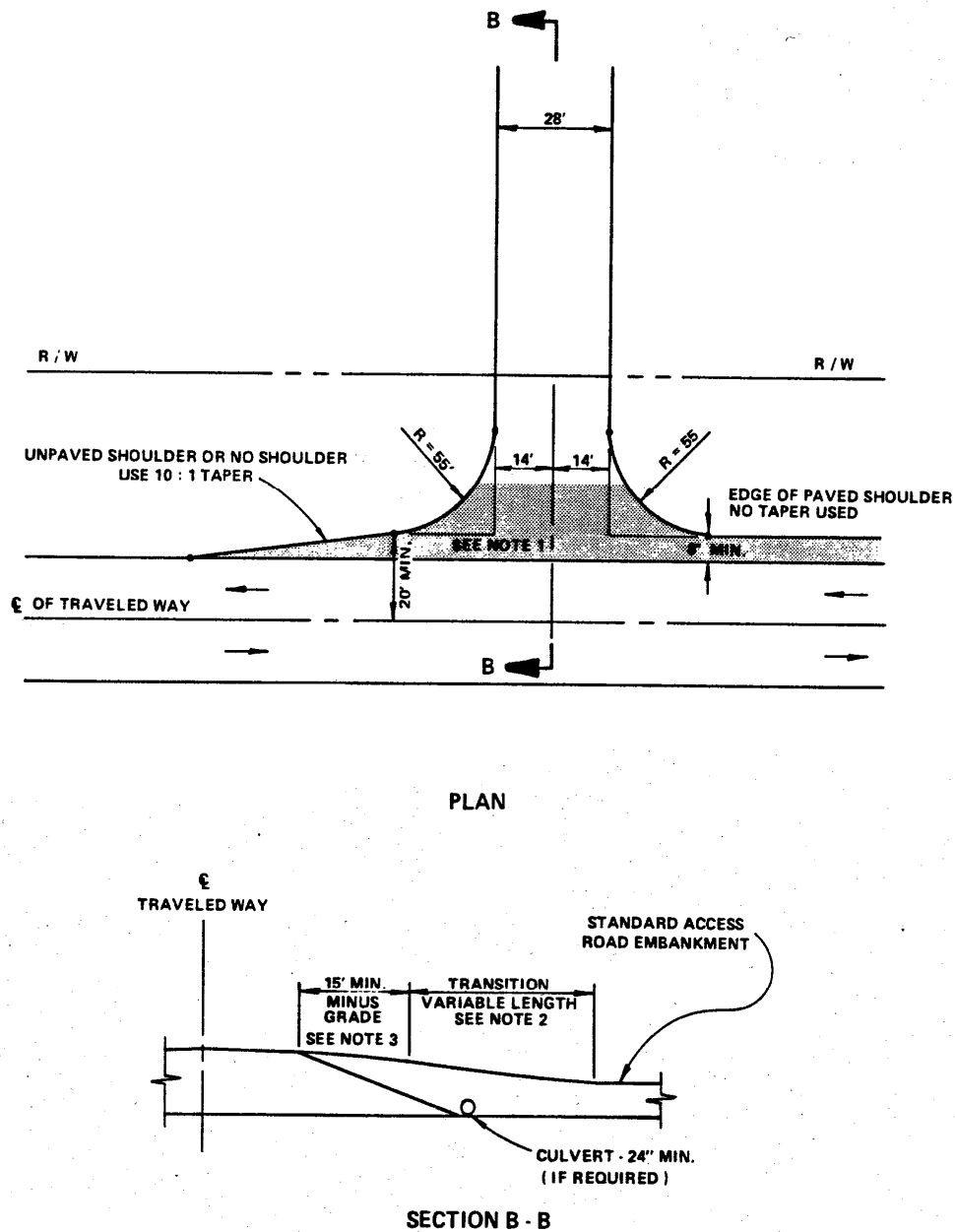
- Figure 7-1 New Access Road Typicals
- Figure 7-2 New Access Road Intersection
- Figure 7-3 Typical Access Road Crossing for Belowground TAPS Pipeline or TAPS Fuel Gas Pipeline Adjacent to TAPS Workpad
- Figure 7-4 Typical Access Road Crossing for Belowground TAPS Fuel Gas Pipeline Adjacent to Dalton Highway
- Figure 7-5 Typical Access Road Crossing Aboveground TAPS Pipeline



**Figure 7-1 New Access Road Typical**

*NOTES:*

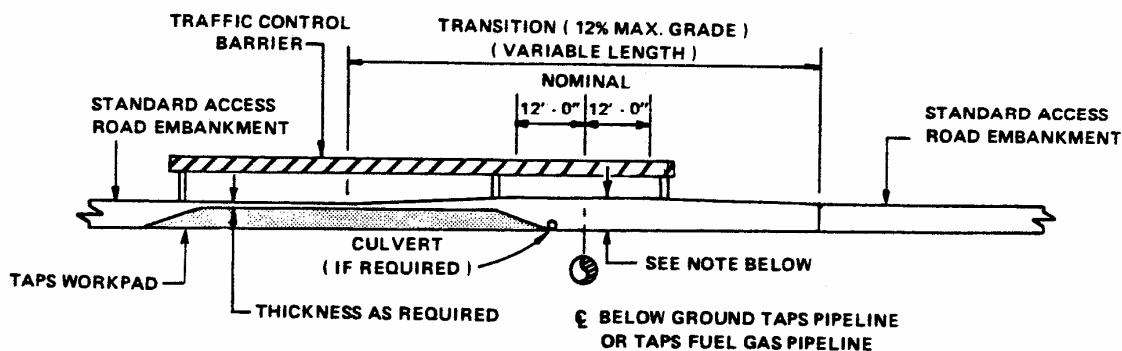
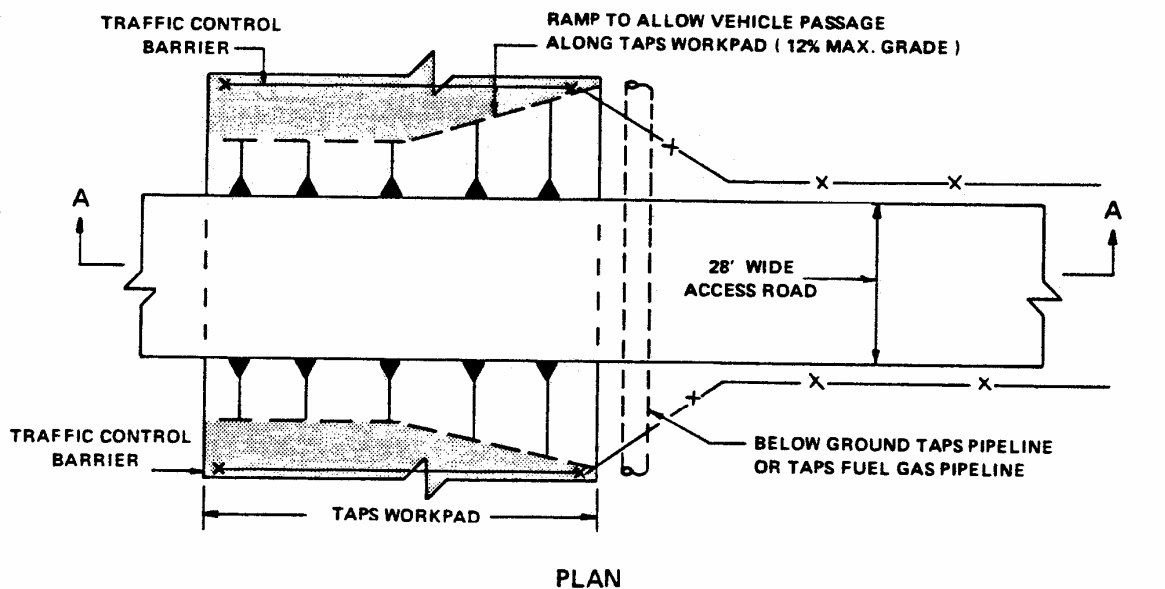
- 1. Periodic turnouts may be provided to accommodate passing requirements.*
- 2. Reference Section 9 for Embankment Design, Section 11 for Drainage Design, Section 12 for Restoration and Section 10 for Clearing.*



**Figure 7-2 New Access Road Intersection**

**NOTES:**

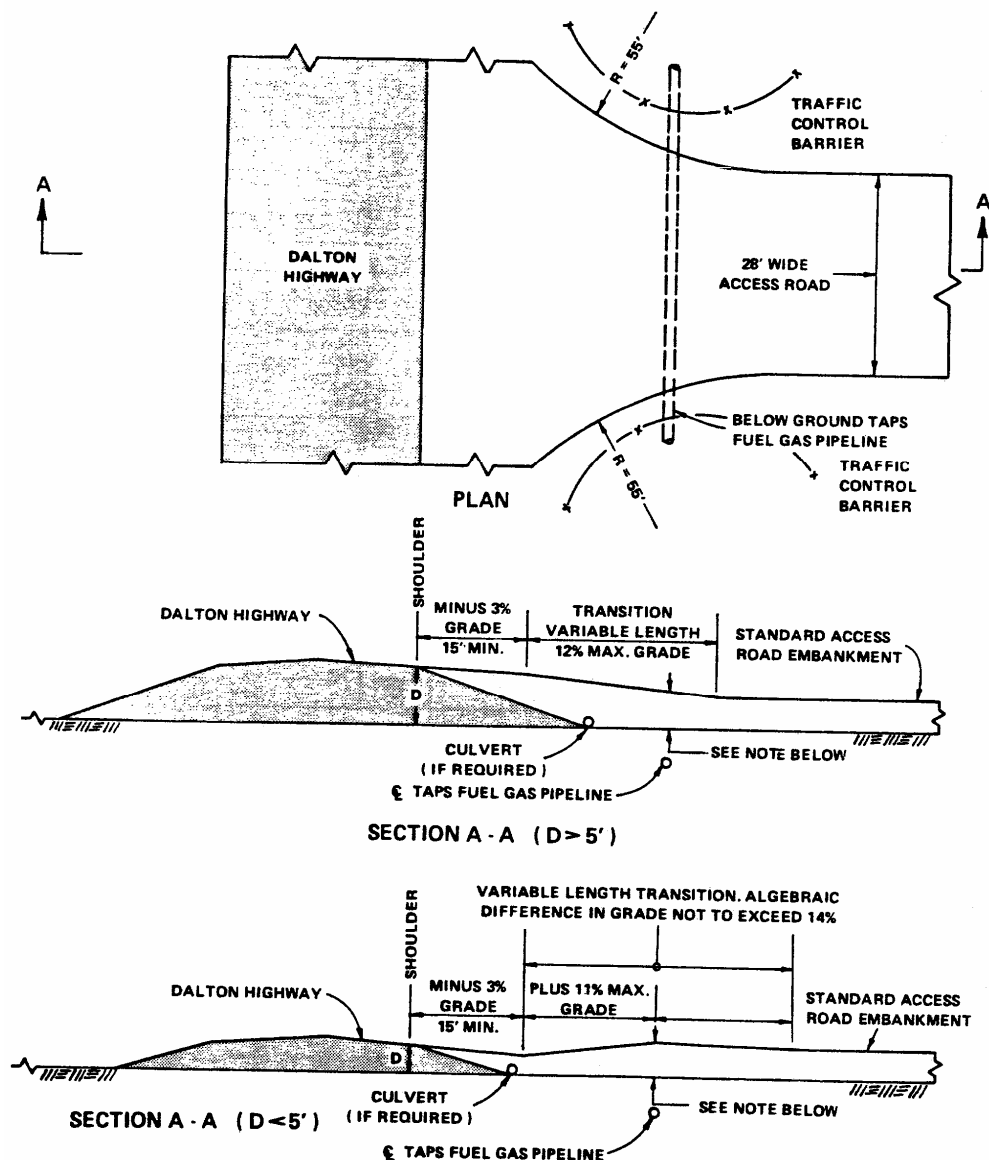
1. If the state highway is paved the approach must be paved a minimum distance of 20 feet from the traveled way or to the ROW whichever is less.
2. Algebraic Difference in grade shall not exceed 14%.
3. Match slope of shoulder or traveled way if no shoulder.



**Figure 7-3 Typical Access Road Crossing For Belowground TAPS Pipeline or TAPS Fuel Gas Pipeline Adjacent to TAPS Workpad**

**NOTES:**

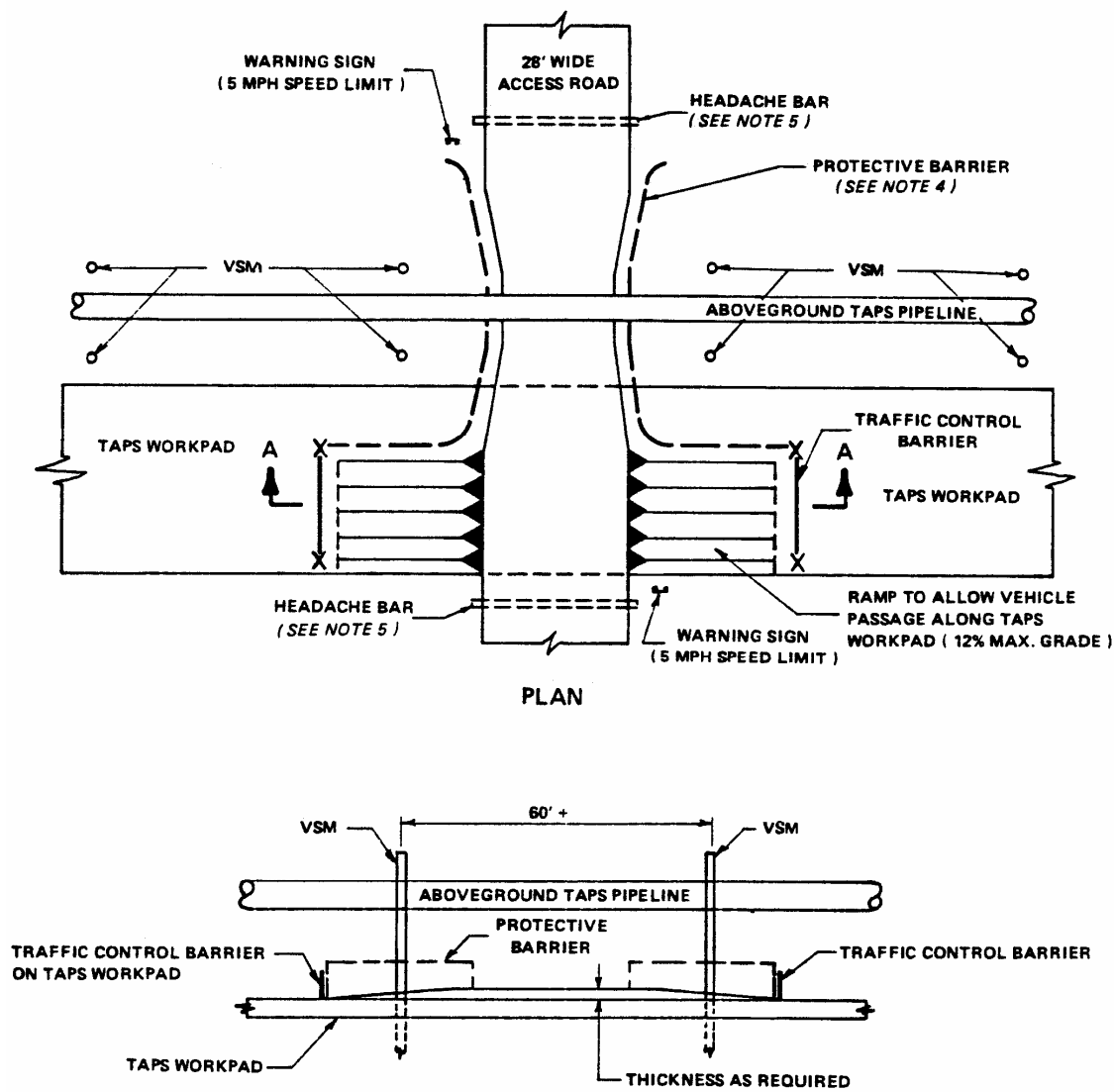
1. Provide minimum embankment thickness of 5 feet over existing ground surface at pipeline unless otherwise required by site specific analysis. Maximum embankment thickness as determined by site specific analysis according to Section 20.
2. Construction over the fuel gas pipeline will be after freeze back of the active layer unless in accordance with approved site specific design



**Figure 7-4 Typical Access Road Crossing For Belowground TAPS Fuel Gas Pipeline Adjacent to Dalton Highway**

**NOTES:**

1. Provide minimum embankment thickness of 5 feet over existing ground surface at pipeline unless otherwise required by site specific analysis. Maximum embankment thickness as determined by site specific analysis according to Section 20.
2. Construction over the fuel gas pipeline will be after freeze back of the active layer unless in accordance with approved site specific design.



**NOTES:**

1. No construction activity will be allowed within a zone described as 15 feet clear horizontal distance from related TAPS facilities.
2. No cuts will be allowed in the vicinity of aboveground TAPS crossings.
3. Criteria stated in Alyeska's documents "Criteria for Reuse of TAPS Workpad" will be utilized in final design.
4. Protective barriers to be installed as required.
5. Headache bars are to be installed as required at an elevation of 12 inches or more under the lowest point on TAPS aboveground pipe within the access road width.